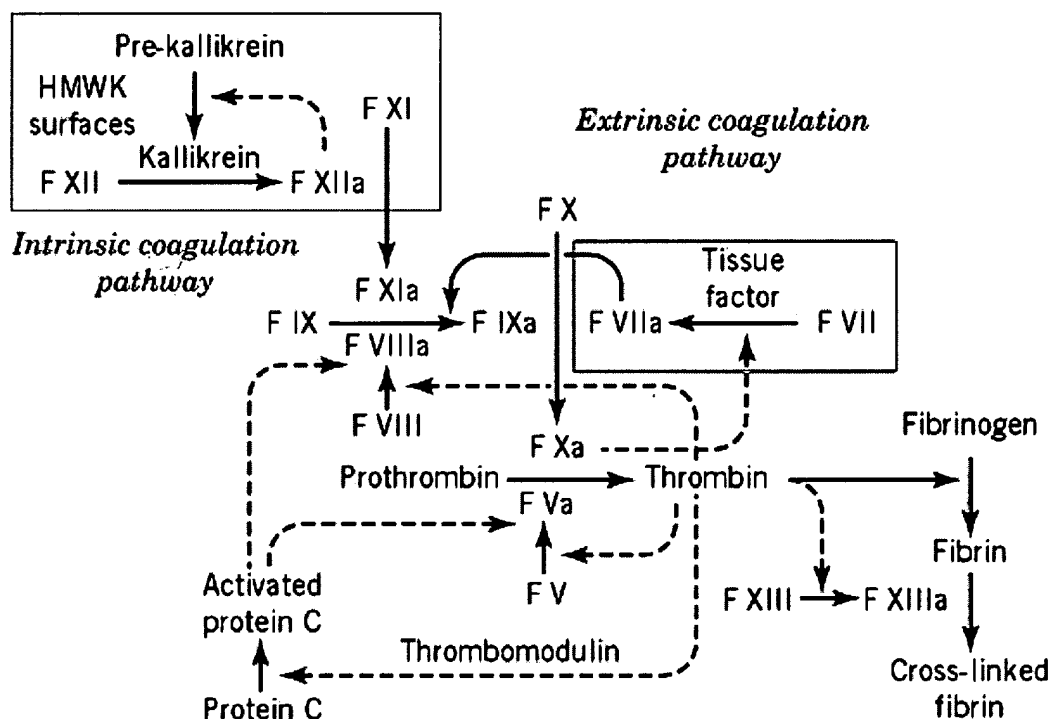


## Blood Clotting

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**Figure 1.** The proteolytic reactions of the blood clotting pathways. The zymogen/proteinase pairs are shown in black with the "forward" reactions as solid lines, the cofactors are shown in blue with the positive feedback reactions as dashed blue lines. The proteolytic negative feedback reactions are shown in red. The complexes initiating the two pathways of coagulation are boxed: the factor VII–tissue factor complex and the contact activation complex that assembles on high molecular-weight kininogen (HMWK). The Roman numeral system used for the coagulation proteinases and cofactors is based loosely on the order in which they were discovered, with the exceptions of the first four components fibrinogen, prothrombin, tissue factor–phospholipid complex, and  $\text{Ca}^{2+}$ . The proteolytically activated forms of these factors are denoted by a subscript "a," for example, factor  $\text{X}_a$ . Additional nonproteolytic inhibitory mechanisms exist, the principal of which are the serpin antithrombin (an inhibitor of most of the Gla-proteinases) and tissue factor pathway inhibitor (TFPI), a Kunitz-type proteinase inhibitor of factors  $\text{VII}_a$  and  $\text{X}_a$ .



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